ARMY GOODWILL PUBLIC SCHOOL, RAJOURI

SPLIT-UP SYLLABUS (PHYSICS)
SESSION: 2021– 22

Class XI **Physics (042)**

S.NO	Month & Assessment	Unit	Detail	No of Periods Allotted	PRACTICALS
1	APRIL	Unit - I	**Physical World and Measurement** Chapter–1: Physical World Physics-scope and excitement; nature of physical laws; Physics, technology and society. Chapter–2: Units and Measurements Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.	10	3 Experiments VERNIER CALLIPER-1,2&3
2	MAY Unit Test 1	Unit II	**Kinematics** Chapter–3: Motion in a Straight Line Frame of reference, Motion in a straight line: Position-time graph, speed and velocity. Elementary concepts of differentiation and integration for describing motion, uniform and non uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).	12	----------
3			**Kinematics (Cont.)** Chapter–4: Motion in a Plane Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, relative velocity, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane,	12	2 Experiment SCREW GAUGE-1&2

			cases of uniform velocity and uniform acceleration-projectile motion, uniform circular motion.		
		Unit - III	**Laws of Motion**	14	
			Chapter–5: Laws of Motion Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).		
			REVISION FOR UT-1		
4	**JULY**	**Unit – IV**	Work, Energy and Power	12	
			Chapter–6: Work, Energy and Power Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.		----------
5	**AUG** **HALF YEARLY**	**Unit -** **V**	**Motion of System of Particles and Rigid Body**	16	
			Chapter–7: System of Particles and Rotational Motion Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. Moment of a force, torque, angular momentum, laws of conservation of angular momentum and its applications. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.		Experiments 1 SPHEROMETER

			REVISION FOR HALF YEARLY EXAM		
6	**SEP**	**Unit – VI**	**Gravitation**	12	
			Chapter–8: Mechanical Properties of Fluids Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications.		----------
		Unit – VII	**Properties of Bulk Matter**	9	
			Chapter–9: Mechanical Properties of Solids Elastic behavior, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy.		
7	**OCT**	**Unit – VII**	**Properties of Bulk Matter (Cont..)**		
			Chapter–10: Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite, Geo-stationary satellites. **Continued…**	7	2 experiments- SIMPLE PENDULUM LOCAL VALUE g
			Chapter 10 (Cont.) Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.		----------
8	**NOV** **Unit Test 2**	**Unit–VII**	**Properties of Bulk Matter (Cont...)**		
			Chapter–11: Thermal Properties of Matter Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity.	16	2 Experiments PARALLELOGRAM LAW-I,II

			Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Green house effect.		

9	**DEC**	**Unit- VIII**	**Thermodynamics**	12	
			Chapter–12: Thermodynamics Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes. Second law of thermodynamics: reversible and irreversible processes, Heat engine and refrigerator.		2 Experiments HOOKES LAW & CALORIMETRY
			REVISION FOR UT-2		
10	**JAN**	**Unit – IX**	**Behavior of Perfect Gases and Kinetic Theory of Gases**	8	
			Chapter–13: Kinetic Theory Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.		
		Unit - X	**Oscillations and Waves**	20	
			Chapter–14: Oscillations Periodic motion - time period, frequency, displacement as a function of time, periodic functions. Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a spring-restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period. Free, forced and damped oscillations (qualitative ideas only), resonance.		1 experiment – Sonomerter-1
			Chapter–15: Waves Wave motion: Transverse and longitudinal waves, speed of wave motion, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.		

			Revision and remedial classes for final EXAM.		

11	**FEB** **FINAL EXAM**				
12	**MAR**		**PTM- RESULT DECLARATION AND NEW SESSION BEGINS.**		

- Note : the no of periods are as allotted by CBSE and may vary as per the need and circumstances.